Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for producing a hardened steel part having cathodic corrosion protection, comprising:

applying a coating to a hardenable steel alloy in a continuous coating process, wherein the coating ~~comprises~~ consists essentially of zinc and contains one or more high oxygen affinity elements in a total quantity of 0.1 % by weight to 15 % by weight in relation to the overall coating;

bringing the coated hardenable steel alloy, at least in some areas, to a temperature necessary for hardening, with the admission of atmospheric oxygen, and heating the coated hardenable steel alloy until it undergoes a microstructural change necessary for the hardening; wherein a superficial skin comprising an oxide of the high oxygen affinity element(s) is formed on the coating;

forming the hardenable steel alloy into a sheet before or after the heating; and

cooling the sheet after sufficient heating, a cooling rate being calculated in order to achieve a hardening of the sheet alloy.

2. (Previously Presented) The method as recited in claim 1, wherein the high oxygen affinity elements used in the mixture are magnesium and/or silicon and/or titanium and/or calcium and/or aluminum and/or manganese and/or boron.

3. (Previously Presented) The method as recited in claim 1, comprising applying the coating using a hot dipping process in which a mixture is used that is composed essentially of zinc and the high oxygen affinity element(s).

4. (Previously Presented) The method as recited in claim 1, comprising applying the coating electrolytically.

5. (Previously Presented) The method as recited in claim 4, comprising applying the electrolytic coating by first depositing a zinc layer onto the hardenable steel alloy and then depositing the high oxygen affinity element(s) onto the previously deposited zinc layer.

6. (Previously Presented) The method as recited in claim 4, comprising electrolytically depositing a zinc layer onto the surface of the hardenable steel alloy and then depositing a coating composed of the high oxygen affinity element(s) onto the zinc surface.

7. (Previously Presented) The method as recited in claim 6, wherein the high oxygen affinity element(s) is/are vaporized.

8. (Previously Presented) The method as recited in claim 1, wherein the coating comprises 0.2 wt.% to 5 wt.% of the high oxygen affinity elements.

9. (Previously Presented) The method as recited in claim 1, wherein the coating comprises 0.26 wt.% to 2.5 wt.% of the high oxygen affinity elements.

10. (Previously Presented) The method as recited in claim 1, wherein the high oxygen affinity element consists essentially of aluminum.

11. (Previously Presented) The method as recited in claim 1, wherein the coating mixture is selected so that during the heating, the coating develops an oxide skin comprising oxides of the high oxygen affinity element(s) and the coating is composed of at least two phases, a zinc-rich phase and an iron-rich phase.

12. (Previously Presented) The method as recited in claim 11, wherein the iron-rich phase has a ratio of zinc to iron of at most 0.95 ($Zn/Fe \leq 0.95$), and the zinc-rich phase has a ratio of zinc to iron of at least 2.0 ($Zn/Fe \geq 2.0$).

13. (Previously Presented) The method as recited in claim 11, wherein the iron-rich phase has a ratio of zinc to iron of approx. 30:70 and the zinc-rich phase has a ratio of zinc to iron of approx. 80:20.

14. (Previously Presented) The method as recited in claim 1, wherein the coating has individual areas with zinc contents of $\geq 90\%$.

15. (Previously Presented) The method as recited in claim 1, wherein the coating is embodied so that with an initial thickness of 15 µm, after the hardening process, it develops a cathodic protective action of at least 4 J/cm^2.

16. (Previously Presented) The method as recited in claim 1, comprising producing the coating with the mixture of zinc and the high oxygen affinity element(s) during the passage of the hardenable steel alloy through a liquid metal bath at a temperature of between 425°C and 690°C, and subsequently cooling the coated hardenable steel alloy.

17. (Previously Presented) The method as recited in claim 1, comprising producing the coating with the mixture of zinc and the high oxygen affinity element(s) during the passage of the hardenable steel alloy through a liquid metal bath at a temperature of between 440°C and 495°C, and subsequently cooling the coated hardenable steel alloy.

18. (Previously Presented) The method as recited in claim 1, comprising inductively heating the hardenable steel alloy.

19. (Previously Presented) The method as recited in claim 1, comprising inductively heating the hardenable steel alloy in a die.

20. (Previously Presented) The method as recited in claim 1, comprising heating the hardenable steel alloy in a radiation furnace.

21. (Previously Presented) The method as recited in claim 1, comprising cooling the sheet in a forming die.

22. (Previously Presented) The method as recited in claim 1, comprising cooling the sheet during formation using a cooled forming die.

23. (Previously Presented) The method as recited in claim 1, comprising cooling the sheet after forming the sheet in a forming die.

24. (Previously Presented) The method as recited in claim 1, comprising cooling the sheet in a form hardening die into which the formed sheet is inserted after heating and in which a form-locked engagement occurs between the formed sheet and a correspondingly shaped, cooled form hardening die.

25. (Previously Presented) The method as recited in claim 1, comprising heating and cooling the hardenable steel alloy in a form hardening die, wherein the heating is executed inductively, and after the inductive heating, the forming die is cooled.

26. (Previously Presented) The method as recited in claim 1, wherein the forming and the hardening of the part are performed with a roll forming device; the coated sheet, at least in some areas, is heated to the austenitization temperature, roll-formed before, during, and/or after this, and then cooled in the roll forming die at a cooling rate that results in a hardening of the sheet alloy.

27. (Withdrawn) A corrosion protection coating for steel sheets that are subjected to a hardening step in which the corrosion protection coating, after being applied to the steel sheet, is subjected to a heat treatment with the admission of oxygen; the corrosion protection coating comprising:

zinc; and

one or more high oxygen affinity elements in an total quantity of 0.1 wt.% to 15.0 wt.% in relation to the overall mixture;

wherein the corrosion protection coating has an oxide skin on the surface comprising oxides of the high oxygen affinity element(s), and the coating is composed of at least two phases including a zinc-rich phase and an iron-rich phase.

28. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the one or more high oxygen affinity elements comprise a mixture of magnesium and/or silicon and/or titanium and/or calcium and/or aluminum and/or boron and/or manganese.

29. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the corrosion protection coating is applied using a hot dipping process.

30. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the corrosion protection coating is applied using an electrolytic depositing process.

31. (Withdrawn) The corrosion protection coating as recited in claim 30, wherein the corrosion protection coating is produced through electrolytic depositing of essentially zinc at the same time as one or more high oxygen affinity elements.

32. (Withdrawn) The corrosion protection coating as recited in claim 30, wherein the corrosion protection coating is produced first through electrolytic depositing of essentially zinc and the subsequent vaporization or deposition with other suitable methods of one or more high oxygen affinity elements.

33. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the total quantity of the one or more high oxygen affinity elements is from 0.02 to 0.5 wt.% in relation to the overall coating.

34. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the total quantity of the one or more high oxygen affinity elements is from 0.6 to 2.5 wt.% in relation to the overall coating.

35. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the high oxygen affinity element consists essentially of aluminum.

36. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the iron-rich phase has a ratio of zinc to iron of at most 0.95 ($Zn/Fe \leq 0.95$), and the zinc-rich phase has a ratio of zinc to iron of at least 2.0 ($Zn/Fe \geq 2.0$).

37. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the iron-rich phase has a zinc to iron ratio of approx. 30:70 and the zinc-rich phase has a zinc to iron ratio of approx. 80:20.

38. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein the corrosion protection coating has individual areas with zinc contents of ≥ 90 wt.% zinc.

39. (Withdrawn) The corrosion protection coating as recited in claim 27, wherein, with an initial thickness of 15 µm, the corrosion protection coating has a cathodic protection energy of at least 4 J/cm^2.

40. (Withdrawn) The corrosion protection coating as recited in claim 27 applied to a hardened steel part.

41. (Withdrawn) The hardened steel part as recited in claim 40, wherein the part comprises a hot rolled or cold rolled steel band with a thickness of ≥ 0.15 mm and with a concentration range of at least one of the alloy elements within the following weight percentage limits:

carbon	up to 0.4,
silicon	up to 1.9,
manganese	up to 3.0,
chromium	up to 1.5,
molybdenum	up to 0.9,
nickel	up to 0.9,
titanium	up to 0.2,
vanadium	up to 0.2
tungsten	up to 0.2,
aluminum	up to 0.2,
boron	up to 0.01,
sulfur	max. 0.01,
phosphorus	max 0.025,

residual iron and impurities.